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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/682,516	09/13/2001	Matthew Sommers	GLO 2 0078	2609
27885	7590	01/05/2004	EXAMINER	
FAY, SHARPE, FAGAN, MINNICH & MCKEE, LLP 1100 SUPERIOR AVENUE, SEVENTH FLOOR CLEVELAND, OH 44114			SAWHNEY, HARGOBIND S	
			ART UNIT	PAPER NUMBER
			2875	

DATE MAILED: 01/05/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

AN

<b>Office Action Summary</b>	Application No. 09/682,516	Applicant(s) SOMMERS ET AL.	
	Examiner Hargobind S Sawhney	Art Unit 2875	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 07 November 2003.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-9, 11-14 and 16-19 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6-9, 11-14, 16, 18 and 19 is/are rejected.
- 7) ☐ Claim(s) 17 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                  | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____  |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)         | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____                                    |

### **DETAILED ACTION**

1. The amendment filed on November 7, 2003 has been entered. Accordingly:
  - Claims 3, 7, 9, 11, 13 and 16-19 have been amended;
  - Claims 10 and 15 have been cancelled;
  - The specification has been amended; and
  - The abstract has been amended.
2. The Declaration of Prior Invention in the United States overcome a cited US Patent Publication (37 C.F.R 1.131) has been entered.

### ***Allowable Subject Matter***

3. The indicated allowability of claims 10, 16 and 17 is withdrawn in view of the newly discovered reference(s) to Tung (US Patent No.: 5,842,297). Rejections based on the newly cited reference(s) follow.

### ***Specification***

4. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required:

Claim 11, line 2, "substantially spherical bottom surface" is not specified in the specification.

***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-3 and 7 are rejected under 35 U.S.C. 102(e) as being anticipated by Tung (US Patent No.: 5,842,297).

Regarding claims 1-3 and 7, Tung ('297) discloses a lighting apparatus 10

(Figure 2) comprising:

- a wave guide 40 (Figures 1-4, column ) having microstructures 44,45 (Figure 1 and 3, column 3, line 26) arranged on a surface – back surface- (Figure 3, column 3, lines 30-34);
- the microstructures 44,45 interacting with light in a wave-guide 40, and scattering at least a portion of the light out of the wave-guide 40 in a pattern 42 (Figure 3, column 3, lines 18-22);

Art Unit: 2875

- the pattern 42 being determined by the arrangement of the microstructures 44,45 (Figure 3, column 3, lines 18-22);
- a plurality of light emitting diodes (LEDs) 20 coupled to the wave-guide 40 (Figures 1,2 and 4 , column 2, lines 50 and 51), and arranged on at least a portion of a perimeter of the planer region;
- the pattern 42 further including a letter D (Figure 3, column 3, lines 18-22);
- the microstructures 44,45 scattering in wide angles (Figures 3 and 4, column 3, lines 35-44); and
- the plurality of light emitting diodes (LEDs) 20 injecting light into the planer region of the light guide 40 (Figure 4).

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tung (US Patent No.: 5,842,297) in view of Lea et al. (US Patent Application Pub. No.: US 20010038539 A1) hereafter referred as Lea.

Tung ('297) discloses a lighting apparatus comprising a light guide including microstructures disposed on its one of the surfaces. However, Tung ('297) does not teach the surface with microstructures additionally having cladding.

On the other hand, Lea discloses an illuminating device (Figure 1) comprising a light guide 30 (Figure 1, Para. 0024) including cladding comprising a surface coating 36 with cladding material (Figure 1, Para. 0024).

It would be have been obvious to one of ordinary skill in the art at the time of the invention to modify the wave guide of Tung ('297) by providing the cladding as taught by Lea for the benefit and advantage of providing light reflection efficiency to its highest level.

5. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over rejected under 35 U.S.C. 103(a) as being unpatentable over Tung (US Patent No.: 5,842,297) in view of Tokunaga (US Patent No.: 5,375,043).

Tung ('297) teaches a wave-guide made of transparent material such as acrylic material. However, Tung ('297) does not teach the wave-guide having a pre-selected color tint.

On the other hand, Tokunaga ('043) teaches a lighting unit (Figure 1) comprising a wave-guide 1 (Figure 1, column 2, line 21) being either a colorless or colored transparent plate (Figure 1, column 1, lines 55 and 56; and column 3, lines 33-36).

It would be have been obvious to one of ordinary skill in the art at the time of the invention to modify the wave guide of Tung ('297) by providing a tinted (smoked) wave

guide as taught by Tokunaga ('043) for the benefit and advantage of imparting the desired light transmission properties and attention value.

6. Claims 6 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tung (US Patent No.: 5,842,297) in view of Yamana et al. (US Patent No.: 5,418,384).

Regarding Claim 6, dependent on Claim 1; and Claim 8, dependent on Claim 7, of Tung ('297) teaches a flat- with no tapered or curved surface - wave-guide. However, of Tung ('297) does not teach a wave-guide including a surface having a pre-selected curvature, and the curved surface further bearing microstructure.

Additionally, regarding Claim 8, Tung ('297) does not teach a wave-guide being tilted with respect to the planar region.

On the other hand, Yamana et al. ('384) discloses a light source device (Figures 7,9 and 11) comprising a wave-guide 11 (Figure 7, column 4, lines 64 and 65) including a surface 12 having a pre-selected curvature (Figures 9 and 11). Further, a portion f7-f9 of the surface 12 bearing microstructures being tilted (Figures 9 and 11, column 6, lines 46-50).

Thus regarding Claims 6 and 8, it would be have been obvious to one of ordinary skill in the art at the time of the invention to modify the wave guide of Tung ('297) by providing a the wave guide with pre-selected curvature as taught by Yamana et al. ('384) for the benefit and advantage of providing a wave guide imparting uniformly distributed light output throughout its surface area.

7. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tung (US Patent No.: 5,842,297) in view of Lin et al. (US Patent No.: 6,464,366 B1).

Tung ('297) does not teach the lighting apparatus comprising an index matching material positioned between the plurality of LEDs and the wave-guide.

On the other hand, Lin et al. ('366 B1) discloses an illumination device 10 (Figure 1, column 5, line 10) comprising an index matching material 20 positioned between a plurality of LEDs 11 and the wave-guide 30 (Figure 1, column 5, lines 34-36).

It would be have been obvious to one of ordinary skill in the art at the time of the invention to modify the wave guide of Tung ('297) by providing the index matching material as taught by Lin et al. ('366 B1) for the benefit and advantage of improving the local illumination uniformity closes to the light source.

8. Claims 11-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gwo-Juh et al. (US Patent No.: 6,164,791).

Regarding Claim 11, Gwo-Juh et al. ('791) discloses an optical wave guide 2 (Figures 3-12) comprising:

- a transparent material – light guide - 2 formed into a shape including a top surface and a substantially spherical bottom surface (Figures 8 and 12) each optically communicating with a light source 5 (Figures 3,5,8 and 12, column 2, lines 56-58 and column 3, line 18);
- a plurality of microstructures 21 (Figures 3,5,8 and 12, column 2, lines 60 and 61) disposed on the bottom surface; and
- the microstructures scattering at least a portion of light injected from the light source 5 (Figures 3,5,8 and 12, column 2, lines 56-61).



However, Gwo-Juh et al. ('791) teaches the light guide being shaped from a transparent material instead of the light guide being shaped from a translucent material as claimed by the applicant.

It would be have been obvious to one of ordinary skill in the art at the time of the invention to modify the wave guide of Gwo-Juh et al. ('791) by providing translucent light guide well known in the art, including Kuwabara et al. (US Patent No.: 6,508,564 B1), column 5, lines 31-33, for the benefits of providing light guides capable of both reflecting and refracting the incident light from the light source.

Regarding Claim 12, Gwo-Juh et al. ('791) further discloses light scattered by the microstructure forms a preselected light output pattern (Figure 5 and 13, column 1, lines 43-48).

Regarding Claim 13, Gwo-Juh et al. ('791) further discloses the microstructure including texture formed on the bottom surface (Figure 5 and 13, column 1, lines 43-48 and column 3, lines 28-30).

9. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Gwo-Juh et al. (US Patent No.: 6,164,791) in view of Lea et al. (US Patent Application Pub. No.: US 20010038539 A1).

Gwo-Juh et al. ('791) discloses an optical wave-guide including microstructures disposed on its bottom surface. However, Gwo-Juh et al. ('791) does not teach the surface with microstructures additionally having cladding.

On the other hand, Lea discloses an illuminating device (Figure 1) comprising a light guide 30 (Figure 1, Para. 0024) including cladding comprising a surface coating 36 with cladding material (Figure 1, Para. 0024).

It would be have been obvious to one of ordinary skill in the art at the time of the invention to modify the wave guide of Gwo-Juh et al. ('791) by providing the cladding as taught by Lea for the benefit and advantage of providing light reflection efficiency to its highest level.

10. Claims 16, 18 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pelka et al. (US Patent No.: 6,473,554 B1).

Regarding Claim 16, Pelka et al. ('554 B1) discloses a lighting apparatus 26 (Figures 10 and 11, column 10, lines 30-32) comprising:

- a light emissive wave guide 42b including a textured surface 58 – with microstructures 54 (Figures 4, 4A, 4B and 4C, Column 7, lines 52-57, and column 8, lines 6-16);
- the light guide 42b further having its perimeter thicker than that of its center portion (Figure 11);
- a light producing element 44 (Figures 10 and 11, column 10, line 34) positioned adjacent to the perimeter of the light emissive elements 42b; and
- the light producing element 42b emitting light substantially along the axis orthogonal to the light emissive element 42b (Figures 10 and 11).

However, Pelka et al. ('554 B1) teaches the use of one light-producing element, whereas the applicant claims a plurality of light producing elements positioned around the perimeter.

It would be have been obvious to one of ordinary skill in the art at the time of the invention to modify the wave guide of Pelka et al. ('554 B1) by providing a plurality of light producing elements, since it has been held that a mere duplication of the essential working parts of an apparatus involves only ordinary skill in the art. Further provision of a plurality of light- producing elements would enhance brightness of the display.

Regarding Claim 18, Pelka et al. ('554 B1) discloses the lighting apparatus further including the textured surface 58 including microstructures 54 (Figures 4, 4A, 4B and 4C, Column 7, lines 52-57, and column 8, lines 6-16) arranged in a pattern. However, Pelka et al. ('554 B1) does not teach the textured surface forming a symbol.

It would have been an obvious matter of design choice to configure the textured surface showing a symbol, since the applicant has not disclosed that the surface showing a symbol solves any problem or is for a particular reason. It appears that the claimed invention would perform equally well with the textured surface configured for exhibiting a symbol. Further, configuration of the structured surface for exhibiting a symbol is well known in the art including Tung (US Patent No.: 5,842,297).

Regarding Claim 19, Pelka et al. ('554 B1) discloses the lighting apparatus further including the textured surface 58 including microstructures 54 (Figures 4, 4A, 4B and 4C, Column 7, lines 52-57, and column 8, lines 6-16) arranged in a pattern (Figures

5 and 6, column 8, lines 30-41) on the interior – bottom surface – of the light emissive light guide 42b (Figures 5 and 6).

***Allowable Subject Matter***

11. Claim 17 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The prior art of record, including Tung (US Patent No.: 5,842,297) and Gwo-Juh et al. (US Patent No.: 6,164,791), does not show or suggest the applicant's invention as claimed. Specifically, the prior art of record does not disclose proper motivation for combining:

- an encapsulant surrounding a plurality of light producing elements and abutting a light emissive face as recited in Claim 17; and
- the encapsulant matching a refractive index of the light emissive wave-guide as recited in Claim 17.

The above-indicated combination, including an encapsulant matching a refractive index of the light-emissive wave-guide makes the invention unique.

***Response to Amendment***

12. Applicant's arguments filed on November 7, 2003 with respect to the 35 U.S.C. 102(e) rejections of claims 1,2,4,7,15,18 and 19 have been fully considered but they are not considered but are moot in view of the new ground(s) of rejections.

***Conclusion***

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Lee (U.S. Patent No. 6,305,109 B1);

Abe et al. (U.S. Patent No. 5,857,761);

Smith et al. (U.S. Patent No. 5,640,792);

Ishikawa et al. (U.S. Patent No. 5,575,549);

Tawara et al. (U.S. Patent No. 5,555,160);

Lerner (U.S. Patent No. 5,433,024);

Kaneko et al. (U.S. Patent No. 5,414,599);

Lea et al. (U.S. Patent Application Pub. No. US 2001/0038539 A1); and

Pelka et al. (U.S. Patent No. 6,473,554 B1)

Each of the above-indicated prior arts discloses a lighting apparatus comprising some of the claimed features claimed by the applicant.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hargobind S Sawhney whose telephone number is 703-306-5909. The examiner can normally be reached on 7:30 A.M. to 4:30 P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sandra O'Shea can be reached on 703-305-4939. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9306 for regular communications and 703-872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-2956.

HSS  
December 24, 2003



Sandra O'Shea  
Supervisory Patent Examiner  
Technology Center 2800